CLAIMS

Having thus described the invention, we claim:

1. A hand-held tool for evaluating a fitting assembly of the type having a conduit and a fluid coupling installed thereon, comprising:

a source adapted to apply mechanical energy waves into the fitting assembly; said source receiving reflected energy waves and producing a signal related thereto; and

an analyzer that determines a characteristic of the fitting assembly as a function of said reflected portions of said energy waves.

2. The tool of claim 1, wherein the source is integrated with a gap gauge.

3. The tool of claim 1, wherein the analyzer is integrated with a gap gauge.

4. The tool of claim 1, wherein said tool includes a gap gauge and an ultrasonic analyzer.

5. The tool of claim 1, wherein said source comprises a separate transmitter and receiver.

6. The tool of claim 1, wherein said source produces transient shear ultrasonic energy waves.

7. The tool of claim 1, wherein said analyzer correlates said received energy waves.

8. The tool of claim 7, wherein said correlation is based on a Morlet wavelet correlation function.

9. The tool of claim 1, wherein said energy waves are applied to a fitting body that is associated with the fluid coupling.

10. The tool of claim 1, wherein said energy waves are applied to the conduit at an angle within the range of about greater than 0° to about 90° from normal relative to a longitudinal axis of the conduit.

11. The tool of claim 1, wherein said characteristic relates to bottoming of an end of the conduit in the fluid coupling.

12. The tool of claim 10, wherein said energy waves are input at two or more different locations about the conduit, said source producing a plurality of electrical signals in response to said received energy waves, each electrical signal corresponding to a respective one or said locations.

13. The tool of claim 12 comprising a correlation function of said plurality of electrical signals and wherein said analyzer produces an output that corresponds to axial position of an end of the conduit based on said correlation.